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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/544,108	04/06/00	SHERMAN	K

HM12/0629
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EXAMINER	
WORTMAN,D	
ART UNIT	**PAPER NUMBER**
1648	2

DATE MAILED: 06/29/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/544,108	Sherman
Examiner	**Art Unit**
Donna C. Wortman, Ph.D.	1648

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on Apr 6, 2000

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-24 is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-24 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

The following guidelines illustrate the preferred layout and content for patent applications. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

The following order or arrangement is preferred in framing the specification and, except for the reference to "Microfiche Appendix" and the drawings, each of the lettered items should appear in upper case, without underlining or bold type, as section headings. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) Title of the Invention.
(b) Cross-References to Related Applications.
(c) Statement Regarding Federally Sponsored Research or Development.
(d) Reference to a "Microfiche Appendix" (see 37 CFR 1.96).
(e) Background of the Invention.
    1. Field of the Invention.
    2. Description of the Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) Brief Summary of the Invention.
(g) Brief Description of the Several Views of the Drawing(s).
(h) Detailed Description of the Invention.
(i) Claim or Claims (commencing on a separate sheet).
(j) Abstract of the Disclosure (commencing on a separate sheet).
(k) Drawings.
(l) Sequence Listing (see 37 CFR 1.821-1.825).

In particular, the claims in the instant application should commence on a separate page.

Applicant is requested to update the continuing information and the status of related applications cited on page 1 of the specification.

Claims 2-6, 8-11, 13, 16, 18, 19, 21 and 24 are objected to because of the following informalities:

Dependent claims 2-6 and 8-11 should be introduced by the article "The" rather than by "A".

In claim 13, line 2, there should be a space between "α" and "interferon".

In claim 16, line 2, "system" is misspelled.

In claim 18, line 1, there should be a space between "formulation" and "of".

In claim 19, last line, "α-2B" should be "α-2b".

In claim 21, line 1, "formulation" is misspelled.

In claim 24, line 2, second occurrence, "thymosin" is misspelled.

Appropriate correction is required.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, last line, recites "said thymosin" without antecedent.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, 4, 6-9, 12, 14-18, 21, 23, and 24 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for using thymosin in combination with interferon α for treatment of hepatitis C, does not reasonably provide enablement for treating hepatitis C virus infection with any and all types of interferon. The specification does not enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The specification provides only prophetic examples that show the combination broadly of interferon and thymosin or thymosin fragments for the treatment of hepatitis C. Hoofnagle et al. (Seminars in Liver Disease 9:259-263, 1989), cited on PTO 892, attached, describe the effective use of alpha interferon in treating hepatitis C; with respect to the use of other interferons, Hoofnagle et al. merely suggest trying the combination of alpha interferon with other agents such as gamma interferon (see, e.g., Hoofnagle, page 261, col. 2, end of first full paragraph: "Future studies must also focus on improving the long-term response rate, perhaps by using a combination of other antiviral agents (ribavirin, dideoxynucleosides, gamma interferon) with alpha interferon."; also, page 262, beginning of last text paragraph: "Alpha (and possibly beta) interferon show great promise as beneficial therapeutic agents in chronic hepatitis C.") The Merck Manual, Seventeenth Edition, published in 1999, cited on PTO 892, well after the publication of Hoofnagle et al. and Applicant's effective filing date, illustrates the present state of the art with respect to using interferon to treat hepatitis, including hepatitis C, and indicates that interferon-α, but not other interferon types, is an accepted treatment for hepatitis C. These references show the lack of predictability in discovering specific antiviral effects of known categories of antiviral compounds. Taking into account the amount of factual evidence and guidance provided by Applicant's specification, the lack of predictability in the field, and the state of the art at the time the

invention was made, the specification cannot be said to enable one of skill in the art to practice the invention with respect to treatment of hepatitis C with interferons other than interferon-α, without undue experimentation and with a reasonable expectation for success.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7-9, 12-14, 16-18 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Huang et al. (BIOSIS Abstract 90072936; Virol. Sin 5(1) 69-73, 1990), cited on PTO 892. Huang et al. disclose the pharmaceutical combination of interferon and thymosin for treating hepatitis B in human patients. Since the composition showed antiviral effects in human patients, the amounts are believed to be the same as those claimed, and the combination of Huang et al. is deemed to anticipate the claimed subject matter, regardless of the intended use which is not given patentable weight. Alternatively, combining interferon and thymosin for human treatment is taught by Huang et al., and determining effective forms and dosages is purely conventional and would have been obvious over Huang et al.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 10, 11, 15, 19, 20, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al., cited above, in view of Hoofnagle et al., US Patent 4,079,127 to Goldstein et al., and US Patent 4,353,821 to Birr et al. Huang et al. teach combining interferon and thymosin in antiviral amounts for human treatment but do not specifically teach recombinant interferon α-2b, or purified or synthetic thymosin α-1. Hoofnagle et al. teach that recombinant interferon α-2b is successful in therapy of hepatitis B (page 260, first paragraph). Goldstein et el. disclose the immunopotentiating effect of thymosin fraction 5 and the isolation and purification from it of the biologically active polypeptide thymosin α-1. Birr et al. teach the synthesis of thymosin α-1 and active fragments. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the recombinant interferon α-2b taught by Hoofnagle et al. and the thymosins of Goldstein et al. or Birr et al. in the interferon-thymosin combination of Huang et al. in order to obtain the advantages of reproducibility and purity associated with recombinant and synthetic peptide products for pharmaceutical use.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sherman et al. (Hepatology 27(4):1128-1135, 1998) and Rasi et al. (Gut 39:679-683, 1996), both cited on PTO 892, disclose treatment of patients with chronic hepatitis C with thymosin α1 and interferon α2b.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Wortman whose telephone number is (703) 308-1032. The examiner can normally be reached on Monday through Thursday from 7:30 am to 5:00 pm. The examiner can also be reached on alternate Fridays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached at (703) 308-4027. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1235.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Examiner Donna Wortman, Art Unit 1648, and should be marked "OFFICIAL" for entry into prosecution history or "DRAFT" for consideration by the examiner without entry. The Art Unit 1648 FAX telephone number for official papers is (703) 308-4242. FAX machines will be available to receive transmissions 24 hours a day. In compliance with 1096 OG 30, the filing date accorded to each OFFICIAL fax transmission will be determined by the FAX machine's stamped date found on the last page of the transmission, unless that date is a Saturday, Sunday, or Federal Holiday with the District of Columbia, in which case the OFFICIAL date of receipt will be the next business day.

Donna C. Wortman, Ph.D.
Primary Examiner

June 28, 2001